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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/623,092	07/18/2003	Joseph W. Roos	EI-7592	2887
34769	7590	03/02/2006	EXAMINER	
DENNIS H. RAINEAR CHIEF PATENT COUNSEL, ETHYL CORPORATION 330 SOUTH FOURTH STREET RICHMOND, VA 23219			MARCANTONI, PAUL D	
			ART UNIT	PAPER NUMBER
			1755	

DATE MAILED: 03/02/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/623,092

Applicant(s)

ROOS ET AL.

Examiner

Paul Marcantoni

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12/19/05 RCE and response.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-5 and 7-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3-5 and 7-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 1/8/06
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____

Applicant's arguments and RCE filed 12/19/05 is acknowledged and has been fully considered but they are not persuasive.

35 USC 112 Second Paragraph:

Claims 1,3-5, and 7-21 are rejected under 35 U.S.C. 112, second paragraph, as failing to set forth the subject matter which applicant(s) regard as their invention.

The terms "wherein the manganese compound is mononuclear or comprises small clusters of manganese atoms" are vague and indefinite in their independent claims such as 1,12,15, and 19. What do applicants mean by "mononuclear". How is no other manganese containing substances not mononuclear? The specification defines it as a "small" cluster of manganese atoms that is essentially organo-soluble. It is further vague and indefinite because how do applicants define what they mean by "small" cluster as opposed to a "large" cluster and is there any specific numerical value that distinguishes between both cluster sizes for atoms such as manganese atoms?

The applicants state that "small clusters *can* include about 2 to 50 atoms of manganese" as stated on page 4 of their specification. Does this mean that small clusters can be less than 2 atoms of manganese and also still greater than 50? The specification gives little guidance as to the numerical boundaries of what is considered small. Applicants should have particularly pointed out and distinctly claimed a specific range they considered a small cluster. For example, if applicants' claim stated –small clusters containing about 2 to about 50 manganese atoms---- this would not be indefinite but this is not what is being claimed however. Applicants claim only the term "small" which is a relative and thus indefinite term.

Obviousness Type Double Patenting:

Claims 1,3-5, and 7-21 remain provisionally rejected under the judicially created doctrine of obviousness type double patenting as being unpatentable over claims 1-21 of copending application no. 10/623,686 (US Pat Pub 2005/0016057). This is a provisional obviousness type double patenting rejection.

Applicants still have not submitted a terminal disclaimer and thus the ODP rejection above remains as stated above.

35 USC 102/103:

Claims 16-18 and 21 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Kukin (US Patent No. 3,837,820).

Kukin '820 teaches a coal/combustion additive (see col.1, lines 40-45) that is a manganese containing substance that explicitly teaches reducing the amount of carbon in the fly ash because manganese is known to be a carbon destroying catalyst (see col.4, lines 5-9) thus anticipating applicants' claimed invention. Further, even if not anticipated, overlapping ranges of amounts of the same components in the claimed coal additives would have been prima facie obvious to one of ordinary skill in the art.

Also, Kukin does not teach an organo-metallic manganese compound yet an organometallic manganese compound is a species that still falls in the genus of "manganese containing substance that reduces the carbon in fly ash". One of ordinary

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skill in the art would have understood to use any organic or inorganic manganese containing compound for reducing carbon in fly ash.

35 USC 103:

Claims 1,3-5, and 7-21 are rejected under 35 USC 103(a) as obvious over Kerley '992, Kukin '503, or Rolfe '916 alone or in view of Kukin '820.

Kerley '992 teaches that his manganese containing substance (ie cyclomatic metal compound) is used to remove carbon from the "combustion products". One of ordinary skill in the art would have understood that "fly ash" is a combustion product (see col.3, last three lines and col.4 lines 1-8). Kerley teaches he wants to insure the complete absence of carbon in his combustion product (ie "fly ash") and thus he does so by using the manganese compounds to carry through this function.

Even if that is not enough, Kukin '820 teaches that manganese containing substances such as those within Kerley's teaching would have been understood by one of ordinary skill in the art and known by that person to reduce the amount of carbon in the fly ash because manganese is known to be a carbon destroying catalyst (col.4, lines 5-9).

Kukin '503 teaches a coal additive (col.1 lines 43-45) that is an activated manganese that can be used to improve the fuel's (e.g. coal) burning properties to prevent buildup of carbon deposits. Hence, Kukin '503 teaches a desire to reduce the amount of carbon. Kukin '503 also teaches his activated manganese additive as a "smoke reducing and soot destroying catalyst". Note soot is unburned carbon and

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Kukin teaches the reduction of carbon particles including those on the combustion products such as fly ash in a coal burning process.

Again, even if that is not enough, Kukin '820 teaches that manganese containing substances such as those within Kukin '503' teaching would have been understood by one of ordinary skill in the art and known by that person to reduce the amount of carbon in the fly ash and other combustion products because manganese is known to be a carbon destroying catalyst (col.4, lines 5-9).

Rolfe '916 teaches it is known to add manganese complex additive to reduce carbon particles (see, for example, col.2, lines 67-70). Again, even if that is not enough, Kukin '820 teaches that manganese containing substances such as those within Rolfe '916 teaching would have been understood by one of ordinary skill in the art and known by that person to reduce the amount of carbon in the fly ash and other combustion products because manganese is known to be a carbon destroying catalyst (col.4, lines 5-9).

Response:

The examiner notes that the grounds of rejection has been changed as noted above but he will address some of applicants' remarks and comments.

The applicants argue that Kukin '820 does not teach organometallic compounds. In rebuttal, applicants argue a limitation not present in all of their claims (e.g. claim 1) and it is improper to argue a limitation not in the claims. "Organometallic manganese compounds are not present in any of applicant's independent claims. There is also no teaching in Kukin '820 limiting his invention to inorganic manganese and it should be

noted that both inorganic and organic manganese compounds for removing carbon were old and known at the time of applicants' invention.

The applicants then argue that Kukin '820 has no discussion or disclosure of the use of manganese to affect the amount of carbon in fly ash. This is factually incorrect because Kukin '820 teaches the following in column 4, lines 5-9:

With many fuels it is preferred that the combustion chamber additive be a manganese-containing substance. Such a substance reduces the amount of carbon in the fly ash because manganese is known to be a carbon destroying catalyst.

Kukin '503 teaches it is old to add a manganese containing additive to prevent carbon deposit buildup (col.1, lines 40-45). While Kukin may teach "soot destroying catalysts" or "smoke reducing agents", applicants state that Kukin '503 draws a distinction between effectiveness with respect to smoke/soot and fly ash. The examiner disagrees. There is no distinction in removing carbon because that is exactly what is being done by adding a manganese containing additive. There is also no teaching regarding effectiveness of carbon removal of fly ash and versus soot/smoke so it is unclear where applicants support is for their statement. More so, even if he does not state what occurs when manganese containing additive is utilized in a combustion process such as coal burning. Kukin '820 teaches that is is old and known in the art to add a manganese containing substance to reduce the amount of carbon in fly ash because carbon is known to be a carbon destroying catalyst (col.4, lines 5-9 of Kukin again).

The applicants also argue particle size of 0.01 larger than that of their invention. In rebuttal, applicants argue a limitation not claimed for their invention. There is no

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particle size in any of their independent claim and it would be improper to read any particle size into those claims. There does not appear even to be a particle size range for their manganese compounds in the applicants' specification.

The applicants also argue that the organometallic additive does not deliver the benefits sought versus their claimed invention. Again, applicants argue a limitation not in their independent claim because there is not organometallic limitation in any of the independent claims.

The applicants also refer the examiner to Tables I through IV as well in addition to Table I originally mentioned by the examiner. In rebuttal, it seems that Tables II through IV are irrelevant because they refer not to coal combustion but to slag. The applicants are again referred back to Table I (Fuel Ash Test) wherein it teaches for example 5 (which, by the way, appears to be the only example that is coal combustion), the characteristics of the fly ash are a "loose, finely powdered, and no adherence to the dish". That looks like a favorable result thus for a manganese additive for fly ash from coal combustion. The other samples are not relevant related to fuel oil because they are not involving "coal" combustion.

The applicants argue that Kerley only teaches reduction of smoke and soot (soot is unburned carbon so it teaches reducing unburned carbon) and does not teach reducing carbon in fly ash. In rebuttal, the examiner disagrees.

Kerley '992 teaches that his manganese containing substance (ie cyclomatic metal compound) is used to remove carbon from the "combustion products". One of ordinary skill in the art would have understood that "fly ash" is a combustion product (see col.3,

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last three lines and col.4 lines 1-8). Kerley teaches he wants to insure the complete absence of carbon in his combustion product (ie "fly ash) and thus he does so by using the manganese compounds to carry through this function.

Even if that is not enough, Kukin '820 teaches that manganese containing substances such as those within Kerley's teaching would have been understood by one of ordinary skill in the art and known by that person to reduce the amount of carbon in the fly ash because manganese is known to be a carbon destroying catalyst (col.4, lines 5-9).

The applicants would appear to agree that Rolfe '916 teaches it is known to add manganese complex additive to reduce carbon particles (see, for example, col.2, lines 67-70) yet they argue that Rolfe does not teach carbon removal for fly ash. The examiner disagrees and notes that one of ordinary skill in the art would have understood that manganese additive effectively reduces carbon in fly ash. Kukin '820 teaches that manganese containing substances such as those within Rolfe '916 teaching would have been understood by one of ordinary skill in the art and known by that person to reduce the amount of carbon in the fly ash and other combustion products because manganese is known to be a carbon destroying catalyst (col.4, lines 5-9).

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Paul Marcantoni whose telephone number is 571-272-1373. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jerry Lorengo, can be reached at 571-272-1233. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Paul Marcantoni
Primary Examiner
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